

## The American Radio Relay League



The American Radio Relay League, Inc. is a noncommercial association of radio amateurs, organized for the promotion of interest in Amateur Radio communication and experimentation, for the establishment of networks to provide communications in the event of disasters or other emergencies, for the advancement of the radio art and of the public welfare, for the representation of the radio amateur in legislative matters, and for the maintenance of fraternalism and a high standard of conduct.

ARRL is an incorporated association without capital stock chartered under the laws of the state of Connecticut, and is an exempt organization under Section 501(c)(3) of the Internal Revenue Code of 1986. Its affairs are governed by a Board of Directors, whose voting members are elected every three years by the general membership. The officers are elected or appointed by the Directors. The League is noncommercial, and no one who could gain financially from the shaping of its affairs is eligible for membership on its Board.

"Of, by, and for the radio amateur," ARRL numbers within its ranks the vast majority of active amateurs in the nation and has a proud history of achievement as the standard-bearer in amateur affairs.

A *bona fide* interest in Amateur Radio is the only essential qualification of membership; an Amateur Radio license is not a prerequisite, although full voting membership is granted only to licensed amateurs in the US.

Membership inquiries and general correspondence should be addressed to the administrative headquarters:

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### Officers

**President:** Rick Roderick, K5UR  
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**Chief Executive Officer:** Barry Shelly, N1VXY

The purpose of *QEX* is to:

- 1) provide a medium for the exchange of ideas and information among Amateur Radio experimenters,
- 2) document advanced technical work in the Amateur Radio field, and
- 3) support efforts to advance the state of the Amateur Radio art.

All correspondence concerning *QEX* should be addressed to the American Radio Relay League, 225 Main Street, Newington, CT 06111 USA. Envelopes containing manuscripts and letters for publication in *QEX* should be marked Editor, *QEX*.

Both theoretical and practical technical articles are welcomed. Manuscripts should be submitted in word-processor format, if possible. We can redraw any figures as long as their content is clear. Photos should be glossy, color or black-and-white prints of at least the size they are to appear in *QEX* or high-resolution digital images (300 dots per inch or higher at the printed size). Further information for authors can be found on the Web at [www.arrl.org/qex/](http://www.arrl.org/qex/) or by e-mail to [qex@arrl.org](mailto:qex@arrl.org).

Any opinions expressed in *QEX* are those of the authors, not necessarily those of the Editor or the League. While we strive to ensure all material is technically correct, authors are expected to defend their own assertions. Products mentioned are included for your information only; no endorsement is implied. Readers are cautioned to verify the availability of products before sending money to vendors.

Kazimierz "Kai" Siwiak, KE4PT

## Perspectives

### Diversity

Reactions to "Constraints" in the previous *QEX* were gratifying. "Just like with antennas, article diversity is a strength, not a weakness!" writes *QEX* reader and author Jan Simons, PAØSIM. We concur. Larry Copeland, KB1UMD, writes in detail, and we quote.

"Regarding 'Perspectives' in *QEX* Jan./Feb. 2018, I greatly enjoy *QEX* and wish that it were twice as long! I devour it!... I don't mind that some articles are over my head, they fire the imagination.... I most value *QEX* for its tutorial qualities. Leave articles about operation, DXpeditions, contest scores, society news, product reviews, FCC doings, and so on to *QST* and *CQ*. Those magazines can and should cover "simpler" construction and design articles. The day we stop publishing schematics, we are doomed..."

"We risk becoming a hobby of appliance operators with the dumbing down of technical skills... [But] our communications skills...are still enormously valuable. Witness all the greatly appreciated volunteer ham emergency communications work during recent hurricanes. The hobby is also at great risk from HOAs and other station restrictions. The clever technically persistent ham can DX even under rather severe restrictions."

"I was a CW Novice in the 1960s (WN1KSR). But life got in the way... and I lost years. Some excellent ham co-workers...discovered that I was once a ham and pounded on me to get back in, for which I am very grateful.... I was astounded by the new gear when I set up a modest station in 2010. Radios were small, dripping with features, filtering that we could only dream of, modes and bands, and they didn't drift!"

"I badly wanted to build *something* homebrew and was thrilled to make a serviceable antenna tuner from junk box parts.... Moon bounce, antenna simulation, Smith charts, mesh networks and digital modes fascinate me. Maintaining technical expertise in ham radio is crucial. There is a place for communications skills, store-bought gear, emergency preparedness and organization in ham radio. But the technical core of ham radio is vital — we need *QEX*!"

"Computer and signal processing expertise has given us digital modes, moon bounce, ham satellites, repeaters, EchoLink and other internet-connected VOIP facilities. Appliance operators did not invent these things."

"A suggestion: any worthy articles...that do not fit in *QEX*...ought to go on an ARRL website somewhere.... Such articles could trigger lively, healthy debate!.... You can add my vote for a bigger *QEX*."

### In This Issue

Our *QEX* authors contributed to the communications experimental arts in diverse Amateur Radio topics.

Jeff Crawford, KØZR, designs kilowatt-level HF band-pass filters with bandwidths up to 5%.

Al Christman, K3LC, optimizes an 8-circle vertical array.

Rudy Severns, N6LF, studies insulated vs. bare copper wire for antenna radials.

Dan Bobczynski, KG4HNS, resistor search program dramatically increases your resistor inventory.

Chuck MacCluer, W8MQW, proposes a method of quadrature direction finding.

Keep the full-length *QEX* articles flowing in, but if brevity is your forte, share a brief **Technical Note** of perhaps several hundred words in length plus a figure or two. Expand on another author's work and add to the Amateur Radio *institutional memory* with your technical observation. Let us know that your submission is intended as a **Note**.

*QEX* is edited by Kazimierz "Kai" Siwiak, KE4PT, ([ksiwiak@arrl.org](mailto:ksiwiak@arrl.org)) and is published bimonthly. *QEX* is a forum for the free exchange of ideas among communications experimenters. The content is driven by you, the reader and prospective author. The subscription rate (6 issues per year in the United States) is \$29. First Class delivery in the US is available at an annual rate of \$40. For international subscribers, including those in Canada and Mexico, *QEX* can be delivered by airmail for \$35 annually. Subscribe today at [www.arrl.org/qex](http://www.arrl.org/qex).

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Very best regards,

Kazimierz "Kai" Siwiak, KE4PT